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NATIONAL COMMUNICATIONS

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Table of Contents

Features & Columns

FEATURE STORY
RAILFAN SAFETY
People of all ages enjoy the past time of watching trains 4

We Are Still Waiting for FM-CB 10

Scanning in the Great Smoky Mountains..... 12

DON'T TRY THIS AT HOME
What You Should Know About Performing Scanner Modifications 14

The Uniden Bearcat BC-796D Scanner 16

Hams May Chat A Lot, But Activity Is Worth Monitoring..... 18

Grundig S350 Review..... 22

Scanning the Civil Air Patrol 25

Scanner Features, Which One Do You Really Need? Part 1..... 27

Ham Licence Restructuring Soon..... 31

Products Announcements..... 34

Someone Has To Go First..... 36

Closing Comments..... 37

Last Page Out 38

Advertisers

Advanced Specialties 2
AOR..... 21
Bearcat Radio Club 13, 24
C. Crane..... 30
Cobra 11
Communication Electronics 7
Everhardt Antennas 28
National Communications Frequencies 8
R.K. Leef 19
Radio Shack 40
Radioworld..... 19
REACT 33
Scan Cat 15
St. Jude Children's Hospital..... 15
Uniden 39
Universal Radio 8

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FEATURE STORY

RAILFAN SAFETY

By Jim Sutton, N2OPS

They gather next to the railroad with cameras, camcorders and binoculars in hand. And scanner radios in their pockets, A "burp" emits from a scanner and they jump to attention. As a train comes into sight there is an air of jubilation. Railfans are doing their thing.

People of all ages and entire families regularly enjoy the pastime of watching trains. It's power and commerce at it's best. Railfans range from casual observers to the intense with references, cameras and an in-depth knowledge of the railroad system.

Railfans are often only a short distance away from a power that needs to be understood and respected, and now in the age of domestic terrorism, seen all the more from the eyes of the train crew.

Too big to ignore. 10-20 tons moving at 60 mph is a force to be reckoned with. Federal and state laws, as well as common sense, tell us to yield the right of way to trains.

POWER TO BE RESPECTED

Here are some sobering facts that Railfans need to know.

1. Trains are an equal opportunity killer. No group is immune from their power to kill.

2. You are 50 times more likely to be killed by a train than a car.

3. Braking time is 1 to 1 -1 / 2 miles. This is greater than the distance the crew can see ahead.

4. Accidents are devastating to the engineers. They need counseling afterwards and often even quit.

5. Emergency braking has the potential to cause a derailment.

6. 50% of collisions happen when crossing warning devices are working properly.

OPERATION LIFESAVER

Since 1972 Operation Lifesaver is a non-profit organization that focuses on three areas of rail safety.

1. EDUCATION

In addition to educating school children as young as kindergarten,

Operation Lifesaver personnel train railroad police, law enforcement,

Firefighters, EMT personnel, as well as DOT and other highway workers.

2. ENGINEERING

Safer crossings and reducing the number of crossings are just a few of the areas in which Operation Lifesaver works.

Operation Lifesaver works to educate local law enforcement personnel and judges on the importance of enforcement of laws pertaining to railroads.

3. ENFORCEMENT

Law enforcement personnel and judges often minimize the magnitude of trespassing on railroad property. Operation Lifesaver strives to educate those in law enforcement

People of all ages enjoy the pastime of watching trains.

that they are sending a message that minimizes the danger posed by railroads.

BASIC GUIDELINES FOR THE RAILFAN

1. Never trespass on railroad property! At public crossings stay away from the tracks. Stand back at least 15 feet from the nearest rail at a railroad crossing. `Dragging equipment can injure Railfans, even at what they think is a safe distance.

2. Think how you look through the eyes of the engineers and conductors. They often cringe when they see people standing dangerously close and they have no idea what those standing too close will do next.

Our young ones learn by our example.

Obeying the laws will ensure Railfan safety and preserve their credibility in the eyes of railroad officials.

3. Remember the only safe and legal place to cross the tracks is at a railroad crossing. Taking photos, videos or just plain watching does not exempt the Railfan from acting within the law or using common sense.

4. The age of terrorism has changed life forever for railroad personnel. And as a result Railfans have to take a closer look at how they conduct themselves. We are now in an age where trespassers may well be considered to be terrorists.

A good lens allows great photos from a safe and legal distance.

AMERICAN ASSOCIATION OF RAILROADS RAIL FAN CLUB

The American Association of Railroads sponsors the Rail Fan Club. A visit to their web site is a must!

Other pages at this site include: Newsletter signup. Railroad Emergency Contact Numbers Railroad History Railroads and Technology Field Guide For Teachers

EQUIPMENT FOR THE RAILFAN

1. SCANNER

This is must equipment for the Railfan. See scanner listening below for tips.

2. FREQUENCY LISTS

It is vital that the scanner be programmed with the frequencies that are used in that section of the railroad.

3. TABLET

Taking notes is both fun and a great way to establish times to catch the most trains. And the Railfan can be ready to jot down notes from other Railfans.

4. MAPS

These can be found on the internet and in stores. Some local and county maps show railroads. And the best railroad maps often show abandoned railroads.

5. RAILROAD REPORTING MARKS

These 2-4 letter markings on railroad cars that indicate the ownership.
It is interesting to see the various products transported by railroads.

6. HAZARDOUS REPORTING MARKS

The diamonds on railroad cars indicate what is being carried and the action. These numbers provide vital information to emergency personnel to cross reference information on the product in a railroad emergency.
This photo of the CSX Goodman Yard in Rochester, New York was taken safely from the Main Street bridge.

7. CAMERA

A zoom lens is a must for the safety conscious Railfan. Digital photography has opened a whole new world for the photographer.

8. COMFORT

Keeping a safe and legal distance coupled with the right comforts such

Continued on page 6

FEATURE STORY

RAILFAN SAFETY continued

as a good chair will make the train watching experience a memorable one.

Railfanning is an opportunity to introduce the kids to the world of railroads and the world of scanner listening.

SCANNER LISTENING

Railfans and scanners are like potatoes and gravy and spaghetti and meatballs. They go hand in hand. Here is some of what will be heard on railroad frequencies.

1. Most of what is heard will be two way communications between train personnel, dispatchers, and/or work crews. Knowing the locations

And mileposts will give the Railfan an overview of what is happening on the rails and when to expect a train to come into view.

2. Defect detectors replaced the caboose. Detectors can report on defects, dragging equipment, number of axles, and the speed. These are almost always on the same frequency as the voice communications.

3. "Burps" are often overlooked when programming the scanner. This radio system relays data from the engine to the radio mounting behind the last car on the train. The frequency of 452.9375 is the front of the train and 457.9375 is the rear of the train. The scanner will begin receiving the front of train "burps" around 2-3 miles away.

4. Most scanners have enough channels to load all the standard railroad frequencies. 160.215-161.565 @.015

Continued on page 9

TIPS FOR SAFE, COURTEOUS RAILFANNING.

(from the Rail Fan Club web site)

- Always expect a train! This is the most important rule of railfanning, especially critical when you're in an area with multiple tracks where the sound of one train can mask the sound of a second train on the other set of tracks.
- Cross the tracks at approved crossings. Crossing in the middle of the tracks puts you at risk of tripping on rails or slipping on icy ballast. There is no margin for error if a train is approaching.
- Don't try to beat a train at a crossing. Train speed can be very deceptive. If you misjudge it by just a little, you could become a statistic.
- Don't stand close to the tracks. A train is at least three feet wider than the tracks on each side. In addition, a fast moving train may kick up ballast. Coal could be dislodged from an open hopper. Metal straps used to secure cargo may come loose and pose a danger to people standing too close to the tracks.
- Don't walk along tracks or on bridges or in tunnels. You may not hear an approaching train. And clearances in bridges and tunnels can be tight and you may not be able to escape an approaching train.
- Don't trespass on rail property. Rail yards are private property. Never enter them without permission. If asked to leave, do so without being rude. Also don't trespass on someone else's property, just to get that perfect shot. Seek out legal places for taking pictures.
- Don't climb on rail equipment. Even a freight car that is standing on a siding and isn't attached to a train can be dangerous.
- Don't try to cross the tracks between cars of a stopped train. That train may begin moving at any moment.
- Don't ever try to hop a freight car. We shouldn't even have to mention this one. But, sadly, every year people die and are seriously injured from doing this. A few are misguided Railfans.
- Be courteous to other Railfans. Try not to step into someone else's photo line of sight. Don't talk loudly as a train approaches in case someone else is trying to record the sounds.

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Size: 7 9/16" Wide x 6 15/16" Deep x 2 13/16" High

Frequency Coverage: 25.0000-512.0000 MHz., 806.000-823.9875MHz., 849.0125-868.9875 MHz., 894.0125-1300.000 MHz.

When you buy your Bearcat 780XLTGV Trunktracker package deal from Communications Electronics, you get more. The GV means "Great Value." With your BC780XLT scanner purchase, you also get a **free deluxe scanner headphone** designed for home or race track use. Headset features independent volume controls and 3.5 mm gold right angle plug. The Bearcat 780XLT has 500 channels and the widest frequency coverage of any Bearcat scanner ever. Packed with features such as Trunktracker III to cover EDACS, Motorola and EF Johnson systems, control channel only mode to allow you to automatically trunk many systems by simply programming the control channel, S.A.M.E. weather alert, full-frequency display and backlit controls, built-in CTCSS/DCS to assign analog and digital subaudible tone codes to a specific frequency in memory, PC Control with RS232 port, Beep Alert, Record function, VFO control, menu-driven design, total channel control and much more. Our CEI package deal includes telescopic antenna, AC adapter, cigarette lighter cord, DC cord, mobile mounting bracket with screws, owner's manual, trunking frequency guide and one-year limited Uniden factory warranty. For maximum scanning enjoyment, operate your scanner from your computer running Windows. Order Scancat Gold for Windows, part number **SGFW** for $99.95 and magnetic mount antenna part number **ANTMMBNC** for $29.95. Not compatible with AGEIS, ASTRO or ESAS systems. For fastest delivery, order on-line at www.usascan.com.

Bearcat® 895XLT Trunk Tracker

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Less -$320 Instant Rebate / Special $179.95

300 Channels • 10 banks • Built-in CTCSS • S Meter

Size: 10 1/2" Wide x 7 1/2" Deep x 3 3/8" High

Frequency Coverage: 29.000-54.000 MHz., 108.000-174 MHz., 216.000-512.000 MHz., 806.000-823.995 MHz., 849.0125-868.995 MHz., 894.0125-956.000 MHz.

The Bearcat 895XLT is superb for intercepting trunked analog communications transmissions with features like TurboScan™ to search VHF channels at 100 steps per second. This base and mobile scanner is also ideal for intelligence professionals because it has a Signal Strength Meter, RS232C Port to allow computer-control of your scanner via optional hardware and 30 trunking channel indicator annunciators to show you real-time trunking activity for an entire trunking system. Other features include Auto Store - Automatically stores all active frequencies within the specified bank(s). Auto Recording - Lets you record channel activity from the scanner onto a tape recorder. CTCSS Tone Board (Continuous Tone Control Squelch System) allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning pleasure, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; **PS002** DC power cord - enables permanent operation from your vehicle fuse box $14.95; **MB001** Mobile mounting bracket $14.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached $19.95; **CAT895** Computer serial cable $29.95. The BC895XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, EDACS, ESAS or LTR systems.

Bearcat® 245XLT Trunk Tracker II

Mfg. suggested list price $429.95/**CEI price $189.95**

300 Channels • 10 banks • Trunk Scan and Scan Lists
Trunk Lockout • Trunk Delay • Cloning Capability
10 Priority Channels • Programmed Service Search
Size: 2 1/2" Wide x 1 3/4" Deep x 6" High

Frequency Coverage:
29.300-54.000 MHz., 108-174 MHz., 406-512 MHz., 806-823.995 MHz., 849.0125-868.995 MHz., 894.0125-956.000 MHz.

Our Bearcat TrunkTracker BC245XLT, is the world's first scanner designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS and EDACS® analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. Our scanner offers many new benefits such as Multi-Track - Track more than one trunking system at a time and scan conventional and trunked systems at the same time. 300 Channels - Program one frequency into each channel. 12 Bands, 10 Banks - Includes 12 bands, with aircraft and 800 MHz. 10 banks with 30 channels each are useful for storing similar frequencies to maintain faster scanning cycles or for storing all the frequencies of a trunked system. Smart Scanner - Automatically program your BC245XLT with all the frequencies and trunking talk groups for your local area by accessing the Bearcat national database with your PC. If you do not have a PC simply use an external modem. Turbo Search - Increases the search speed to 300 steps per second when monitoring frequency bands with 5 KHz. steps. 10 Priority Channels - You can assign one priority channel in each bank. Assigning a priority channel allows you to keep track of activity on your most important channels while monitoring other channels for transmissions. Preprogrammed Service (SVC) Search - Allows you to toggle through preprogrammed police, fire/emergency, railroad, aircraft, marine, and weather frequencies. Unique Data Skip - Allows your scanner to skip unwanted data transmissions and reduces unwanted birdies. Memory Backup - If the battery completely discharges or if power is disconnected, the frequencies programmed in your scanner are retained in memory. Manual Channel Access - Go directly to any channel. LCD Back Light - An LCD light remains on for 15 seconds when the back light key is pressed. Autolight - Automatically turns the backlight on when your scanner stops on a transmission. Battery Save - In manual mode, the BC245XLT automatically reduces its power requirements to extend the battery's charge. Attenuator - Reduces the signal strength to help prevent signal overload. The BC245XLT also works as a conventional scanner. Now it's easy to continuously monitor many radio conversations even though the message is switching frequencies. The BC245XLT comes with AC adapter, one rechargeable long life ni-cad battery pack, belt clip, flexible rubber antenna, earphone, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, ESAS or LTR systems.

Hear more action on your radio scanner today. Order on-line at www.usascan.com for quick delivery. For maximum scanning satisfaction, operate the Bearcat 245XLT from your computer running Windows. Order Scancat Gold for Windows, part number **SGFW** for $99.95 or the surveillance enhanced version with audio recording part number **SGFWSE** for $159.95.

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Bearcat 780XLT 500 ch. Trunktracker III base/mobile	$324.95
Bearcat 279CLT 100 ch. AM/FM/SAME WX alert scanner	$159.95
Bearcat 245XLT 300 ch. Trunktracker II handheld scanner	$189.95
Bearcat 248CLT 50 ch. base AM/FM/weather alert scanner	$89.95
Bearcat Sportcat 200 alpha handheld sports scanner	$169.95
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Bearcat 80XLT 50-channel handheld scanner	$99.95
Bearcat 60XLT 30-channel handheld scanner	$74.95
Bearcat BCT7 information mobile scanner	$139.95
AOR AR8200 Mark II Wide Band handheld scanner	$539.95
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ICOM R10 handheld wideband communications receiver	$279.95
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SC-180 *Order #3781* $169.95

The Bearcat SC-200 Sportcat is the same as the SC-180, but has 200 alphanumeric memories instead of 100 plus it is PC programmable and includes the PC DB9 serial interface cable.
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RAILFAN SAFETY continued

Erica and Jessica Sutton at Lion Park in Batavia, New York while dad photographs a passing CSX freight.

David Hulings of Operation Lifesaver as an Amtrak train passes in Fairport, New York.

Pain is clearly written on the face of this young teen, who arrived at this Chili Center, New York railroad crossing moments after his 14 year old friend was fatally struck by a train. May those who love you never have such a memory.

steps. Also 452.9375 and 457.9375 for front and end of train.

Scanner manners call for a good earphone or headset. The Railfan reflects on both the Railfan and scanner listener. The courtesies of parking legally and being respectable will go a long way to preserve the image of the Railfan.

A big thank you is extended to David Hulings of Operation Lifesaver for taking the time to provide information for this story.

IN CONCLUSION

Flowers were placed by the grandmother of a 14 year old a few days before marking the first year since he was struck and killed by a passing freight train.

Carelessness can leave grieving people in its wake. As I completed this story I had the opportunity to meet a grandmother who was placing flowers at a railroad crossing where her teen grandson had been killed by a train a year earlier. As I took photos of the flowers, I met a teen who painfully recalled the death of his friend a year earlier.

I wish every Railfan could have seen the tears shed by the grandmother as she remembered her grandson. The grief of such a fatal pedestrian encounter effects family, friends, neighbors and the train crew.

Railfans are the neighborhood watch of railroads. Common sense and a courteous, respectable stance will keep the Railfan a respected and valued individual.

Long live safe Railfans! ●

RAIL FAN RELATED LINKS

OPERATION LIFESAVER http://www.oli.org/

AMERICAN ASSOCIATION OF RAILROADS RAILFAN CLUB http://www.railfanclub.org/index.asp

AMERICAN ASSOCIATION OF RAILROADS http://www.aar.org/

FEDERAL RAILROAD ADMINISTRATION STATISTICS http://safetydata.fra.dot.gov/officeofsafety/

TRACKSIDE MOTELS AND RAILFAN LODGING http://www.goeaston.net/%7Ecahash/

RAILROAD REPORTING MARKS http://www.nrhs.com/reporting_marks/aar_reporting_marks.htm

HAZARDOUS MATERIALS MARKS http://hazmat.dot.gov/erg2000/unidnum.htm

RAILS USA PHOTO LINKS http://www.railsusa.com/photos.shtml

RAILROAD PHOTOGRAPHY http://www.grumpysworld.com/photoguide/strategy.htm

We Are Still Waiting For FM-CB

By: John Phillips N2IUJ

While most of the rest of the world enjoys quiet FM 27 MHz Citizens Band radios, they still remain against current FCC/DOC rules here in the USA and Canada. A license free FM CB service is something we need now, and it has many advantages over the current FRS & MURS FM radios available to consumers.

WHY 27 MHz FM CB?

The logical question many readers may have is Why FM-CB, & how would it differ from currently available license free radios (FRS, Regular CB & MURS). I wrote about this a few years back, and it is time to take another look.

The answers are simple. There is a real need, both private and small business, for a low cost, quiet license free 2 way radio service that will allow users to have Base, Mobile AND portable radios! A service that can have real range measured in miles, not feet, and has more than a small handful of already crowded channels. We simply do not have this today. FRS radios, as most of us already know, are produced and used, per FCC rules, as handheld only radios, with less than 1/2 watt of output & no provision to add external antennas. This makes them worthless for base and mobile operations, and if you arenít located in the middle of the desert or ocean, you're going to realize much less than a mile of range in most cases. Two watt MURS radios tend to be more expensive, and are limited to eight very, very crowded channels that were pulled from existing itinerant business frequencies.

The existing AM/SSB 40 CB channels are also crowded, and the Amplitude (non-FM) mode of transmission makes them more prone to both receive and transmit interference. Existing AM CB radios canít make use of ctcss & dcs (PL & DPL) privacy tones either, so users have no way of blocking out all the chatter that may be on the channel...

Using 27 MHz itself makes sense, vs. other frequencies, for a few reasons. First, because there are virtually almost no "real" users of most of the spectrum directly above and below the existing CB channels and it wouldn't be a problem to find an additional 1/2 MHz or so for an additional 40 to 80 channels. There would be no way to find spectrum in the VHF/UHF area without pulling channels away from users such as Public safety, Cellular, Amateur or Commercial bands. The opposition from these big interests itself would make a citizens radio proposal at other frequencies dead in the water. Another BIG plus is that these FM CB radios already exist, and are being mass-produced for the rest of the planet; in the same $39-150 retail price range of our current USA AM CB sets! England, for example has 80 FM only CB channels in 27 MHz, and makers such as Cobra, Uniden, Radio Shack and Midland make very affordable FM CB sets for their market. Since these transceivers operate at the same 27 MHz band as CB, all existing affordable CB Antennas and accessories are fully compatible too! In fact, AM & SSB modulation is not allowed in England at all, due in part to the interference these modes cause!

THE SPECIFICS

I envision a new license free "CRS" (Citizen's Radio Service) being either 40 or 80 channels in the 26-27 MHz band. Use of ctcss, dcs & split channel operation would be possible. Since there is no peak Amplitude as with AM modes, the same 12W max output allowed by the FCC for SSB CB radios would also apply here.

In order for this to actually happen, it would need to be proposed and backed by a major player in the industry. After many years of people complaining about the need for unlicensed FM handhelds to no avail, Motorola & Radio Shack proposed the FRS service to the FCC a few years back, and it was approved within about a year. I hope someone at Uniden, Cobra, Midland or Ranger is reading this!

Manufacturers and retailers may want to take a hint from FRS on this. Sales of FRS units have gone from

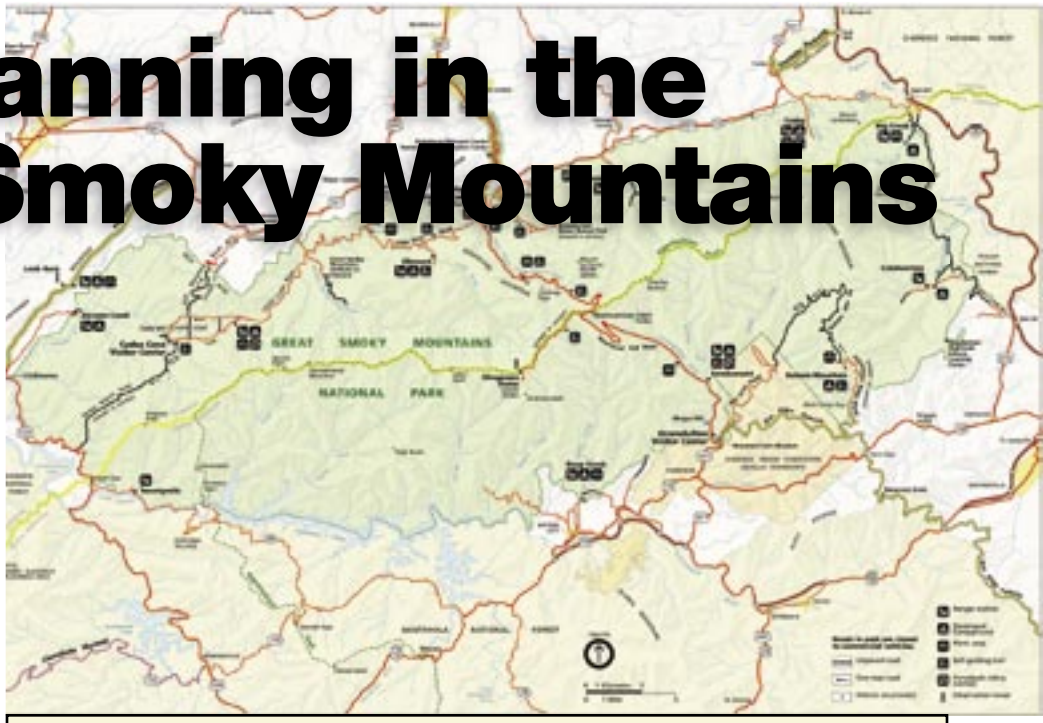
We Are Still Waiting For FM-CB continued

non-existent just a few years ago, to millions of units sold. It's safe to say that jobs have been created and measurable tax dollars have been collected from the sale of these radios.

Some may wonder what effect this would all have on other existing radio services. In short, there would be no effect. The current AM/SSB CB band would remain intact, & be the preferred system for road and truckers, with current channel 9 and 19 activity. 27Mhz is of no interest at all to Cellular, Commercial or trunking carriers, and some Amateur and commercial bands may actually benefit from reduced use by unlicensed operators, since this new FM system will give a legal choice to those that would have just bought an Amateur, Marine or Commercial radio for unlicensed base to mobile operations.

It is time that USA consumers have access to what many of our overseas friends have had for some time. Let's get FM CB on the fast track here, and we may all benefit!

Scanning in the Great Smoky Mountains



By Mark Meece, N8ICW

Deep in the heart of Appalachia straddling the border of North Carolina and Tennessee are mountains of dense forests that almost seem endless. This is the Great Smoky Mountains National Park (GSM NP). Great Smoky Mountains NP is the most visited national park east of the Mississippi. The park covers an area of over 521,490 acres. With an area that large it takes a well maintained and spread out communications system to get the job done. Since the Great Smoky Mountains is a national park it falls under federal guidelines, and utilizes federal radio communications. The National Park Service has an extensive radio system to communicate throughout the park. While this is definitely an area of wilderness, taking a scanner along should provide for lots of listening action.

Clingmans Dome is the highest peak in Great Smoky Mountains NP at 6,643 feet, the main transmitter for the NPS is located here and offers fantastic radio coverage for the area. The remote links listed below are located throughout the park and link back to the site on Clingmans Dome.

TABLE 1 indicates frequencies, codes and known unit IDs for the Great Smoky Mountains National Park.

TABLE 1

Frequency	PL	USER
167.150		NPS GSM NP Ch. 1 Simplex
167.150/166.3500		NPS GSM NP Ch. 2 Repeater
168.200		NPS GSM NP Ch. 3
168.750		NPS GSM NP Ch. 4
167.0750		NPS GSM NP Rangers
169.950		NPS GSM NP Unknown Use
408.4750	173.8	NPS GSM NP UHF Remote Link w/408.725 &167.15/169.55
408.7250	173.8	NPS GSM NP UHF Remote Link w/408.475 & 167.15/169.55
415.1250		NPS GSM NP UHF Remote Link
166.350	173.8	USFS Tanker Base Asheville, NC - Daily
Fire Outlook Reports		
167.1750		NPS Blue Ridge Parkway Ch. 1 Simplex
167.1750/166.3750		NPS Blue Ridge Parkway Ch. 2 Repeater
171.675		NPS Blue Ridge Parkway Link
411.850		NPS Blue Ridge Parkway Link
168.0250/172.400		NPS Law Enforcement Cherokee National Forest
168.3250	173.8	USFS Unknown Use
169.5500		NPS Park wide repeater link (repeats
167.150) 169.675		USFS? P25 Digital
169.8750/168.075	100.0	USFS Cherokee NF North Repeaters
169.9250/166.675	103.5	USFS Cherokee NF South Repeaters
171.1625	173.8	NPS? Unknown Use
171.4750/168.125	103.5	USFS Nantahal NF Asheville - Daily WX
Outlook		
171.525		NPS? P25 Digital
171.750		TVA? P25 Digital
173.9875		USFS Unknown Use
CODES		
350		Bear activity
Units 4xx		Patrol units on Newfound Gap road
5xx		Patrol units around Cataloochee
6xx		Patrol units in Cades Cove and Townsend Area

Scanning in the Great Smoky Mountains continued

Recently the U.S. Forest Service and Bureau of Land Management consolidated some of their nationwide frequencies. Besides the use for large fires these are also used for special details, law enforcement, tactical, and even military exercises in national forests or BLM land.

Common frequencies are shown in TABLE 2.

TABLE 2

168.700	CMD-1
168.100	CMD-2
168.075	CMD-3
166.6125	CMD-4
167.100	CMD-5
168.475	CMD-6
168.050	TAC-1
168.200	TAC-2
168.600	TAC-3
173.9125	TAC-4
173.9625	TAC-5
173.9875	TAC-6

These are sometimes referred to as "NIFC TAC _". With 173.9875 being NIFC TAC-6 it's probably a work detail, or even a law enforcement operation.

USFS seems to be switching most Western (and some Eastern) forest law enforcement nets from the old 166.125 to 168.025 as the repeater output. Inputs seems to vary.

168.325 is the input to USFS "TRAVEL NET" on 169.125, which allows units from different forests to communicate with and enroute to major incidents. 169.125 can be used direct, and each forest has a different PL (or PL's) for various mountain tops & sites.

On the eastern border of the park in Cherokee, North Carolina is the Cherokee Indian Reservation where you will find federal and non-federal frequencies in use. It is home to the Eastern Band of Cherokee Indians with over 12,000 registered members.

TABLE 3 lists the frequencies in use for the Cherokee Indian Reservation.

TABLE 3

164.675	Cherokee Indian Reservation
165.3375	Cherokee Indian Reservation
168.675	Cherokee Indian Reservation
155.115	Cherokee Indian Reservation - Police
154.400	Cherokee Indian Reservation - Fire
155.280	Cherokee Indian Reservation - EMS
155.340	Cherokee Indian Reservation - EMS
155.055	Cherokee Indian Reservation

With heavily visited places nearby such as Dollywood, Pigeon Forge and Bristol Motor Speedway, there is still lots more to listen into for this area.

For more local frequencies for this area check out Ed Muro's comprehensive article "Scanning In the Volunteer State" in the November/December 2003 issue of National Communications. ●

Be sure to check for the latest frequencies on the Nat-Com web page @ www.nat-com.org

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DON'T TRY THIS AT HOME:

What You Should Know About Performing Scanner Modifications

By: Laura Quarantiello

There I was, needle-nose pliers in hand, ready to snip...and I couldn't do it. It was just one little wire on one little diode and I was afraid to make the final cut. What if I clipped the wrong wire? What if something exploded? What if I screwed up my scanner for good? I was paralyzed with thoughts of what could go wrong.

Anytime you venture inside the case of a scanner, damage can result if you donít know what you're doing. Yet we all want to make a good thing better. A quick search of the Internet proves that scanner modifications are a hot topic. Google alone lists 141,000 web pages with references to the subject. There's the Phreak.com web site, which lists not only scanner mods, but ham radio and commercial radio modifications as well, the QRZ.com site with an alphabetized list, numerous sites with references to the infamous Bill Cheek's mods, and even more sites that sell books detailing how to modify everything from the earliest scanners to the latest digital wonders. If there's a way to get more performance from a scanner, someone has probably discovered it. Who wouldn't want to unlock a blocked 800 MHz band, enable extra frequency coverage, expand channel memories, change the display color, adjust the squelch tail, improve audio, or add a data slicer? Modifications range from easy to difficult and mild to wild, but before you grab a screwdriver and open up the case on your radio, there are a few things you should know.

First of all, modifications of any type will void your warranty. Once you break the seal on a scanner by removing the case, the manufacturer will most likely not honor the warranty. As a general rule, manufacturers do not like people tinkering with equipment and then returning it to the company for repair. All too often, that's what happens: someone attempts a modification, screws it up, damages the scanner, and then attempts to send the unit back to the manufacturer to be fixed. If you choose to perform a modification, understand that whatever harm you do will not be repaired by the company. You may find a third party repair shop that will do the work for you, but it won't be covered and you will have to pay out of pocket.

To preserve the warranty, some people wait until their warranty runs out before attempting any modifications. This keeps the warranty intact for any problems that arise with the scanner during the warranty period. However, once the warranty period runs out and you perform a modification and then attempt to send the unit back to the manufacturer for repair, they most likely will not touch the radio. Which leads us to our second tip: if you're not handy with a soldering iron, don't attempt a modification.

It almost goes without saying (but not quite) that tinkering with the innards of your scanner is something for the technically minded. If you've never done any electronics work before, you shouldn't start with something as valuable as your scanner. Some of the easiest modifications, such as cutting a diode, don't require much skill to perform, but some mods are more extensive and should only be done if you feel comfortable working with electronics. Once the innards of a scanner are laid open before you it's quite easy to make a mistake. Even a small slip with a screwdriver may damage delicate diodes and circuit boards. Which leads us directly to: know the correct procedure for the modification you're attempting.

Yes, just about everything is available on the Internet, including details of how to perform modifications on scanners. However, just because the information is there doesn't mean it's right. Before you jump in and start clipping and soldering, take the time to search around for the correct instructions.

Continued on page 15

DON'T TRY THIS AT HOME: What You Should Know About Performing Scanner Modifications

Try to be as specific as possible in your search terms: for instance, "PRO-2006 backlight replacement" instead of "PRO-2006 modification." You may be surprised how many versions of a modification can appear. Compare a few to make sure you have the complete instructions.

Modifications may make your scanner illegal. You knew there was a downside to all this, right? Well, here it is: certain modifications may violate the law. The cellular mod, for instance, when performed on any scanner, is a breach of the current federal law because it allows reception of cellular telephone frequencies. It's your responsibility to check your local ordinances, as well as state and federal laws, to ensure that any modification you perform doesn't make your radio an illegal piece of equipment.

If you're wondering, I did finally cut that wire, which increased the scan speed of my PRO-2006. All it took was a little courage and a sharp pair of cutters. Adding an S- meter, expanding frequency range, adding memory channels, and improving audio are just a few of the modifications that, if done properly, simply make a good thing better. Acquire the right tools, do your research, and then go to work. ●

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The Uniden Bearcat BC-796D Scanner

By: Tom Swisher, WA8PYR

Uniden has made another improvement in scanner technology with the BC-796D handheld scanner. An advancement of the digital Trunktracker technology introduced in the BC785D/BC250D scanners, the BC796D boasts several new features, including the capability to monitor APCO-25 9600 baud digital systems. The BC796D package includes the radio; a telescoping metal antenna; a large "wall- wart" power supply; a mounting bracket, detailed instruction manual and a trunking frequency guide. The APCO-25 decoder card is included.

The BC796D will scan conventional frequencies, and track Motorola analog, mixed analog/digital and digital trunked systems, as well as LTR and EDACS trunked systems. The radio boasts nearly continuous coverage from 25 to 1300 MHz, with the cellular bands and majority of the UHF-TV band excluded, and with 1000 channels in 10 banks it has plenty of channel capacity. The radio is quite comfortable to use, with a large, informative LCD display and a well-designed keypad. Both display and keypad are backlit using the now-standard Uniden orange color. The backlight is excellent; having both a display and keypad readable in the dark is a real plus, especially in the car.

Sensitivity of the BC796D is excellent, and selectivity is also quite good as scanners go. I found this radio to often receive mobile railroad transmissions in the 160 MHz band that my base scanner was barely hearing. 800 MHz sensitivity, too, appears to be quite good, as I experienced less trouble receiving my local trunked systems than with some other radios. There were some problems with intermod in certain downtown areas, but that is almost a given with any scanner.

Programming the BC796D is quite easy, although time-consuming if one has a great deal of information to enter. Users familiar with the menu system carried over from the BC-780 and BC-250D/785D scanners should have no trouble programming the BC796D. And while programming the radio can be somewhat challenging to the scanning newcomer due to the variety of choices the radio offers, newcomers need not worry; the menu system of programming is quite intuitive and easy to follow. Be sure to read the manual, though, so you know what you're looking at.

One essential continuing feature is CTCSS/DCS decode capability. Wireless is the way of the world these days, and this leads to increased noise and congestion in the RF spectrum, which is a very limited resource. As such, the CTCSS/DCS decode capability in the BC796D is a necessary feature. Most agencies today use CTCSS/DCS on their radio systems to reduce or eliminate interference from co- channel and adjacent channel users, as well as quite a bit of the RF interference emanating from paging, cellular phone and other transmitters. The CTCSS/DCS decoding in the BC796D allows the user to program a conventional frequency with CTCSS/DCS codes, thus eliminating quite a bit of noise reception.

One major step forward for the BC-796 is the capability to track 9600 baud APCO-25 digital systems. This feature was missing from the BC-250D/785D scanners for various reasons, and with the number of 9.6kb systems increasing regularly, is a necessary feature. Unlike the BC250/785 scanners, the digital card is included with the radio, and the package sells for a lower price than the combined prices from previous models. One step that is still necessary for most users is to "tune" the P25 audio for best quality. To do this, one must follow the procedure given in the user manual to tune the audio for the lowest possible number on the quality indicator. This procedure is covered in detail in the manual. Once it has been completed, however, recovered audio is good. The only time I encountered intelligibility problems was when someone was on the fringes of the local APCO-25 system. Conventional audio, too, is excellent, far better than in many recent scanners.

As in the BC296D, the BC796D has 12 excellent pre-programmed search banks; these allow the user to go through the Service menu, select a service and begin searching with just a few touches of the keypad. The radio also features "Chain Search," which allows one to program up to 10 personal search banks and search them in any combination.

Continued on page 17

The Uniden Bearcat BC-796D Scanner continued

Other useful features include variable delay times, RF attenuator, lockout restore and auto-store. One of these very useful features is NWR-SAME alert decode. This allows you to enter the codes designated for your area and receive weather alerts sent to your area, and only those, without hearing alerts for areas 50 miles away. The rich feature set means there are plenty of options for even the most finicky of scanner users.

The BC796D is computer programmable, like most of it's Trunktracking predecessors. There are several software options available; two great choices are Scancat-Lite-Plus from Scancat and ARC250 from BuTel. Both are great, with each performing the function of programming the scanner quite well. Reviews of both programs will be coming in a future issue of National Communications.

One step Uniden has taken recently is to release the official programming protocol for their scanners. This will make the existing programs even better, and will allow those who dabble in writing software to put together their own program if they so desire.

There are, unfortunately, a couple of drawbacks to the BC796D. A continuing brain-teasing annoyance is the digital audio quality. Since hearing the audio quality of the Radio Shack Pro-96, I have been spoiled. The Pro-96 automatically and continuously tracks the audio for best quality, and also includes digital AGC (Automatic Gain Control) to keep the audio levels relatively constant, so that one isn't constantly straining to hear one transmission and being deafened by the next. Using the 796 and the Pro96 side-by-side was no comparison; listening to digital on the BC796 was simply tiresome and grew old very quickly. While the digital audio quality on the BC796D is acceptable, the need to manually adjust the audio quality setting is bothersome. Furthermore, the "one quality setting per band" feature is unacceptable, just as with the BC250/785 scanners. In areas with multiple P25 digital systems, the audio quality will almost certainly vary, especially between single-site and simulcast systems, and a single setting per band, radio-wide, just won't do it. The audio quality settings need to be changed to a bank-by-bank setting that will allow them to be set for individual systems.

Uniden could not go wrong by incorporating automatic tracking and digital AGC in the next generation, as well as the capability to adjust manually if needed. At this point, if it comes down to a choice of automatic or manual audio quality settings, I would opt for automatic in an instant.

A minor problem, depending on the situation, is the use of 100-channel banks. Since many people like to group frequencies by function (police, fire and so on), memory management is often easier with smaller banks. I personally do not care for having trunked and conventional systems in the same banks, as it's difficult to lock in to a particular conventional channel when the radio is leaping rapidly back and forth between trunked and conventional frequencies; with trunked systems running to a maximum of 28 channels per site (and only one system allowed per bank), this leads to a considerable waste of channel space. I would have been happier with 20 banks of 50 channels each for more effective memory management; early Regency programmable handheld scanners allowed the user to set up 4 banks of varying channel capacity to suit individual needs; this is perhaps an idea that really needs to be resurrected.

On the other side of the coin, however, 100-channel banks do have advantages. Being a railfan, one of my favorite things about 100- channel banks is the capability to program all 97 railroad channels in a bank, by channel order. If someone says "go to 45," all I have to do is hit "Manual 9-4-5 Manual" and I'm there.

Another good thing about Uniden is decent customer service. Shortly after the release of the scanner, a bug was found; the scanner would not track trunked IDs above 4096 on 9600 baud digital systems. Uniden very quickly prepared and released a free upgrade, which when applied to the scanner, fixed the problem in short order. This is very impressive service, as many manufacturers would wait until the release of the next version to apply such an upgrade.

Overall, the BC796D is a great scanner. Even though the audio must be adjusted manually, it's still acceptable, and features the radio is loaded with make it well worth the price. With the BCi25D card now included in the scanner price, it becomes an excellent monitoring device. Average street price for the BC796D is about $499, and the BC296D mobile sells for about the same price.

Hams May Chat A Lot, But Activity Is Worth Monitoring

By: Chuck Gysi, N2DUP

Ignore the casual talk, and focus on hearing public service events and emergencies

If you are like many scanner enthusiasts, you may encounter some occasional ham radio activity on the VHF and UHF bands, but you probably don't seek it out. The sometimes constant banter on repeaters can get long-winded at times, and unless it's something of interest to you personally, you probably won't stop to listen.

Hams have been flocking to the so-called 2-meter band from 144-148 MHz for a solid 30-plus years now. While not many hams may have had 2-meter mobile radios back in the early 1970s, now almost every ham has a 2-meter handheld radio. It's the de facto link to all hams anymore.

Because most hams have a 2-meter handheld radio, that's where you'll find most public service types of activities during special events. Sure, you may find some on the 440-MHz band, and perhaps even the 222-MHz band, but you are more likely to find activity on the 2-meter segment because of the popularity of the gear for that band.

What to seek out

Hams by their very charter and existence serve the public with communications assistance. For many local clubs and groups of hams around the country, that means performing public service activities with their radios. It doesn't matter the size of the community as long as hams live there. Many will pitch in and help out with large events.

This compact Yaesu FT1500M will blow you away because of its tiny size. It's easy to mount almost anywhere and is popular with active hams who encounter space problems underneath the dash. Notice the alphanumeric display shows that the 2-meter radio is tuned to 146.520 simplex, or "SIMP52." Photo by Lisa Stephens/ scancomm.net

Like I mentioned, you may find it boring to listen to general ham chatter unless one of the hams brings up a subject you have an interest in. (Don't be surprised to find hams talking about scanning! Because many hams' 2-meter radios can receive public safety frequencies in the VHF high band, you'll find many hams have an interest in scanning, too.)

This dual-band, or VHF and UHF, amateur mobile radio is an older Alinco DR-599T. The radio has been modified to receive 800 MHz, too, as you can see on the UHF side of the display. Notice the cable coming off of the back right side of the radio. That's a separation cable that allows the small control head to be mounted in an easy-to-reach location in the ham's vehicle. The transmitter box then is mounted in the trunk or an out-of-the-way location. Photo by Lisa Stephens

Public service activity can range from the large-scale New York Marathon each year, to small parades in smaller communities where hams help coordinate the effort of getting parade units in line to march. Throughout it all, hams chat on their 2-meter repeaters and simplex frequencies to coordinate their efforts. Likewise, major emergencies also see the same frequencies put into service for emergency communications assistance, such as storm damage, wild fires and mass casualty incidents.

Hams May Chat A Lot cont.

Here's the other part of the Alinco DR-599T dual-band ham transceiver. While the control head is mounted on the instrument panel for very visible operation while driving, the transceiver box is shown here mounted under the driver's seat. The fan on the back of the radio kicks on when transmitting for long periods or at high power. Photo by Lisa Stephens

In every jurisdiction, hams perform essentially the same services, but may go about it differently. For instance, in one western Minnesota county, hams perform storm watch activity from their homes and call in on the local repeater with storm reports of interest to the National Weather Service. In one southeastern Minnesota county, hams actually respond to designated locations throughout the county and stay in their vehicles to observe storm activity and report in on the local repeater to an emergency operations center or the weather service directly. The hams there mount flashing amber lights on the roof of the cars to remain safe at rural crossroads.

The trick is to find out what frequencies hams use in your locale for public service or emergency events. For instance, where I live, there are three local 2-meter repeaters. One repeater is downtown while another is located on a hill on the edge of the city. Both are operated by the local ham club. Another repeater is located on the opposite side of town and is operated by county emergency management. So how do you tell what repeater will be used for what? Easy . monitor when things happen! Actually, depending on the location of public service events, the closest of the two club repeaters might be used. During skywarn activities, call-out is on the one club repeater, while amateurs respond and check in on the repeater operated by emergency management.

Sometimes, a simplex frequency might be used in lieu of a repeater. This might be employed when very local operations are desired. For instance, a club performing communications on a fairgrounds might use a simplex frequency adjacent to the national simplex and calling frequency of 146.520 MHz. They might come up on 146.550 or 146.580. They also might have a "local" chatter channel in the 147-MHz band that might be deployed, such as 147.420 or 147.450. You'd need to do a quick scan to find them. Repeaters typically operate from 145.110 to 145.490 and 146.610 to 147.390. Simplex operations typically can be found on 144.900 to 145.100, 146.400 to 146.580 and 147.420 to 147.570.

But that's not to say amateur public service communications has to occur on the 2-meter band from 144-148 MHz. Some might actually occur on the UHF band from 440-450 MHz, especially if there is a good UHF repeater in your area. Here, repeaters typically operate with outputs from 442 to 445 MHz, while simplex operations can be found from 445 to 447 MHz, with 446.000 as the national simplex channel.

That's not all

While club repeaters and various simplex channels might be pressed into emergency service by your local

Continued on page 20

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Hams May Chat A Lot cont.

hams, don't be surprised to find other unusual applications. After all, hams are supposed to be taking advantage of technology.

For instance, in the event of a major emergency in my community where hams might be called to staff an emergency communications mobile unit, a special on-board repeater can be pressed into service. This repeater does not operate on standard repeater frequencies, so that it doesn't interfere with other coordinated repeater systems.

In addition, hams with cross-band repeat capability on their radios may use that method to get signals out of ravines or into buildings. By relaying signals from radios in their cars, hams can retransmit a 2-meter repeater onto a UHF simplex channel and hear the 2-meter repeater on UHF inside a building that the 2-meter repeater isn't penetrating. That's a neat application that you might stumble across.

Other places?

Of course, you might even encounter some use of the 222-MHz band if there are repeaters in the 222-225 MHz band in your area. This might prove to be a good backup for some groups, and because many scanners do not include this band, might offer better communications security, including from intentional jammers.

Hams also can use the 902-928 and 1240-1300 MHz bands, but you probably won't find them used except in some of the more major urban areas such as Los Angeles and New York. While equipment generally isn't available for the 902-MHz band, there is amateur equipment for the 1296-MHz band that could easily be pressed into service.

Are you prepared for an emergency situation? Program local ham simplex and repeater channels into your scanner, but leave them locked out if the chatter bothers you. It's easy to unlock the channels when something big is happening. A "microwave" simplex channel of 1294.5 MHz is seen programmed into this older RadioShack PRO-2004. Photo by Lisa Stephens/ scancomm.net

The next time you hear hams in your community are pitching in to provide communications for an event, the next time ham stormspotters take to the streets during a bad summer storm, or the next time a major emergency disrupts communications in your locale and forces hams to respond, check out their communications. No, it won't be the everyday chatter you hear as the hams commute from home to work each evening or while running errands. You also may hear more information than you gain from public safety frequencies. Lastly, the hams' networks might be the only form of communications remaining if the event is large enough that normal communications circuits are knocked offline.

Take the time to let us know what you're hearing on the ham bands in your area. And one last tip: If you enjoy listening to ham banter, be sure to check the 6-meter band from 50 to 54 MHz and the 10-meter band, where you can find FM operations from about 29.5 to 29.7 MHz. When

Some close-in public service activities performed by hams take place on simplex frequencies. This Icom IC-746 HF rig also includes 6 and 2 meters. It transmits up to 100 watts on 2 meters, as seen in this photo with 146.550 on the radio's display. Photo by Lisa Stephens

Continued on page 21

New AOR AR8600 Mark II (base) and AR8200 Mark III (handi) Receivers

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Hams May Chat A Lot cont.

Amateur HTs come in all sorts of small sizes today. Small HTs are popular with hams who like to stay in touch with others, especially for notification purposes such as storm spotting. This Yaesu VX-7R is as small as a pack of cigarettes and the optional short antenna makes it easy for hams involved with emergency activities to keep a radio on their hip. Photo by Lisa Stephens/scancomm.net

band conditions are right and the skip is rolling in, don't be surprised to hear repeaters from all over North America on frequencies from 29.6 to 29.7.

Good luck, and if you like what you hear, consider becoming a ham, too. Check the American Radio Relay League's web site at www.ARRL.org.

Write in

Let us know what you're hearing on your scanner. What would you like to monitor? Send your e-mails to nat-com@scanning1.com and make sure you put "Nat-Com" in the subject line so your e-mail doesn't accidentally get spiked to the spam bin. ●

Your next issue of *National Communications* will be mailed out on or around August 15, 2004.

Grundig S350 Review

By: Jon Van Allen - KF7YN

Since many of us who are into scanning, CB and amateur radio are also into shortwave listening, the chance to play with a totally cool new product is hard to pass up. The Grundig S350 is one of those cool new radios that deserve special attention, so we'll put one through the paces here.

Grundig took a new approach to the S350 which is also known by its Chinese counterpart Tecsun BCL-2000. The Grundig and Tecsun versions are made in the same factory in China, but the S350 is made for the North American market with AM band coverage from 530 to 1710 kHz and comes with a 110 Volt AC power cube. The Tecsun's AM coverage stops at 1610 kHz and comes with a 220 Volt AC power cube. You've probably seen these all over eBay in the shortwave radio category. The other difference is color; the S350 is silver whereas the BCL-2000 comes in Black or Red. Personally, I like the silver and am very pleased with the look and layout of the S350.

Back to basics with a modern twist: So you may be asking what makes this radio different from other modern shortwave portables. This is basically old technology married with modern technology, an analog radio with a digital readout. This isn't really a new concept, but the way it is presented is a new idea. I have a Sony ICF-6500W which was made in the early 80's (see photos). It is also an analog radio with a digital readout, but the difference here is the S350 display also has a digital 12 or 24 hour clock, sleep timer, alarm, battery meter, band indicator and signal strength meter. The old Sony does not have any of these features except for the digital readout.

The main advantage of an analog receiver is low noise. Most synthesized receivers (especially budget models) produce noise from their microprocessors. This means a higher "noise floor" and that is very important when it comes to hearing weak signals. Those of us who chase weak signals with our portable radios really appreciate the quieter analog receiver. Of course you don't get something for nothing, there is always a tradeoff - the quieter analog receiver does not have memory capability so you must tune through the bands manually.

But that is not a bad thing for those of us who really enjoy spinning the dial through the bands and this is where the S350 really shines. Besides, there are more than enough modern receivers with lots of memories and before the S350 came along, our analog choices were limited to poorly calibrated portables with slide rule displays. If your interest is turning on the radio, pushing a button to select your favorite AM/FM or shortwave station, this radio may not be for you! But if you enjoy twisting a tuning dial then you will love this radio!

Probably the single biggest complaint of the majority of portable receivers is that the audio momentarily mutes while tuning. This is known as "chuffing" and is very irritating, at least to those of us who grew up with smooth continuous tuning of analog receivers. The S350 does not have this chuffing problem and really is a joy to tune.

Having said that, there is one small caveat: the tuning mechanism has a bit of backlash, which is the tension of the cord and springs that connects the dial to the actual tuner inside the radio. When you stop tuning, the dial has a tendency to backup just a tad which causes the displayed frequency to reverse 1 or 2 kHz. It's really no big deal but the old Sony does not do this so in my mind this is an issue of engineering quality. The Sony was made in a day and age where top

Grundig S350 Review continued

notch quality was the norm and was expected. Although the Chinese have made tremendous progress in terms of quality, I don't think they have the same concept of quality and precision as we do in the Western world. Today we tend to settle for cheaper products and this backlash issue (although minor) is a realization of the move to mass produced cheaper goods.

So what does this all mean when it gets down to how the radio performs? Electronically, the S350 performs very well for a $100 portable. It is very sensitive and reasonably selective (simply stated, selectivity is the ability to separate a weak signal from a nearby stronger signal). This is a single conversion receiver and most single conversion receivers are prone to image reception (which means you may hear signals where they are not supposed to be). Images are a result of a process inside the receiver known as product mixing.

The receiver's circuits mix with the incoming signal and the result is hearing a strong signal on two or more places on the dial. This can be a little confusing as to what frequency the station is really transmitting on. But if you know band allocations, you will know a shortwave broadcast signal at 14.700 is not in the right band. You will find the same signal on 15.610 which is the correct frequency in the 19 meter band. Double and triple conversion receivers generally don't have this problem. This is really the only complaint I have with the S350. I have had radios that were much worse than the S350 so I am really not unhappy with the performance of this radio.

By now you are asking how it stacks up against the Sony. Well the Sony 6500W was known as a DX'ing machine and is highly regarded. On AM (MW) the Sony can hear a weak Travelers Information Station (TIS) on 530 kHz nearly 20 miles north of me. The S350 can barely hear it if I back off the RF gain almost all the

Continued on page 24

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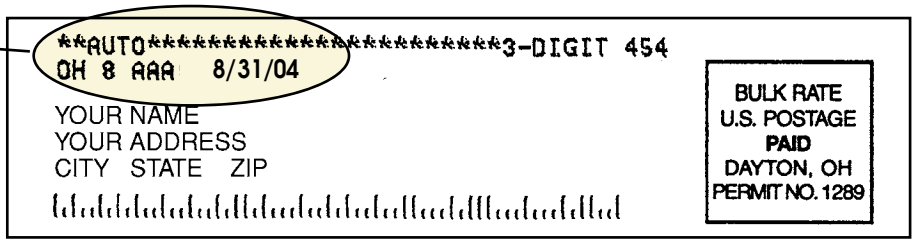

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Grundig S350 Review continued

way. That tells me the Sony does a better job with weak signals but the S350 has a feature the Sony doesn't, a variable RF gain control! This is the key to successful DX'ing with the S350; adjust the RF gain until the desired signal is best. There is also a wide/narrow bandwidth setting which helps reduce adjacent channel interference. Using the RF Gain and narrow bandwidth together can make a huge difference when trying to listen to a weaker station in the presence of a strong station or if you are near a strong AM or SW transmitter.

The current model S350 has a notable and very worthwhile improvement over the original model. The early version had a 90 minute timer which meant you turn the radio on with the timer switch and then 90 minutes later the radio shuts itself off. The new version has an over-ride to the timer which serves as a regular on/off switch. I was much relieved to see this feature added because it was an inconvenience having to turn the radio back on after 90 minutes. It is nice to have the option to use the timer but most of the time it's strictly an on/off issue with me.

Battery life is excellent, around 200 hours on a set of 4 X "D" cells; Long battery life is another benefit of the analog tuner. This may be the first radio I turn on during a power outage or other emergency because it has a power failure backup feature. The radio will still play on batteries if the power fails even if the power plug is still attached. Some other features I really appreciate are an adjustable padded leather carry strap, external antenna connections and automatic turn on at a pre-set time.

The Eton Corporation is the official Grundig distributor and warranty center for North America. Eton advertises the following S350 specs and features:

* AM 530-1710 KHz * FM 88-108 MHz * SHORTWAVE ñ continuous coverage from 3 to 28MHz. This includes all 13 international broadcast bands and citizenís band. 11, 13, 15, 16, 19, 22, 25, 31, 41, 49, 60, 75, and 90 meters. * Power failure backup feature. * Connection jacks for external speakers * Telescopic antenna for FM and shortwave reception * Built-in ferrite antenna for MW Digital clock and alarm. Supplementary connections for external antenna * AM/SW RF Gain Control * LCD displays time, frequency, band, automatic turn-on, and sleep timer * Leather strap * 4 "D" cell batteries (not included) * AC adaptor included DIMENSIONS : 1 0 1/2" W x 6 1/2" H x 3 1/2" D WEIGHT: 3 lbs . 9 oz.

FM performance is decent, but not quite as good as the Sony or my trusty Grundig Satellit 700 which has a superb FM section. So by now you may be getting the idea the S350 is a decent radio for $100 but may not measure up to the superb craftsmanship and performance of the old 6500W or Sat 700. All things must be put in perspective, for $100 you'll be hard pressed to find a better performing radio.

The Grundig S350 is available at Radio Shack for $99.99. Some stores carry it in stock, others may have to order it. You can also order it direct from Eton's website: http://www.grundigradio.com/asp/grundig-shortwaveRadios.asp

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Scanning the Civil Air Patrol

Author's Note: *I once worked communications for the local amateur radio ARES group at a marathon that was held in Suffolk County, New York where the Civil Air Patrol was the lead communications agency. It was an excellent experience watching the CAP members work.*

By Ed Muro, K2EPM

The Civil Air Patrol is the official civilian auxiliary of the United States Air Force. Chartered by Congress, CAP serves our communities with three goals in mind: Aerospace Education, Cadet Programs, and Emergency Services. CAP meets these obligations everyday because of the more than 64,000 volunteers who make it happen, and they have been doing this for over sixty years.

CAP is comprised of over 1,700 local units nationwide. These units participate in varied missions which include:

Participation in general aviation search and rescue (SAR.) When a civilian, non-commercial plane crashes, FAA tasks CAP to locate the site and recover the plane's crew. Search and Rescue involves much more than flight mishaps. CAP actively perform search and rescue for a number of organizations. In addition, they provide relief to devastated areas, aerial photography to incident scenes and countless other tasks such as:

- Homeland security missions.
- Working with FEMA and the American Red Cross when disaster strikes.
- Maintaining an extensive communications network.
- Assisting federal agencies such at Customs and the Border Patrol in the war on drugs.
- Aerospace education.

Accoriding to C/MSgt Joshua Boyce, the Civil Air Patrol (CAP) as chartered by the United States Air Force Rescue Coordination center (AFRCC) is called out to perform nearly 95% of the inland Search and Rescue (SAR). CAP, with itís 52 wings (the states and the national capital along with Puerto Rico) has the largest and most extensive network of active radio communications in the United States of America.

As Civil Air Patrol has a contract from the Department of Defense for Homeland Security we check our radios for the following levels of terrorist threat:

Green: CAP tests its radios monthly
Blue: CAP tests its radios monthly
Yellow: CAP tests its radios weekly
Orange: CAP tests its radios daily
Red: CAP runs tests every hour

In 2003 Civil Air Patrol is accredited with over 5,861.5 hours flown performing Search-and-rescue missions in the United States, 5,353.6 hours for counter drug missions, and 2,948 hours for federal-level emergency services; and was credited with saving at least 88 lives.

Civil Air Patrol's National Headquarters at Maxwell Air Force Base in Ala.

A Civil Air Patrol Squad Meeting.

On September 12th, 2001, CAP members nationwide were standing alert and gearing up for a coordinated response. The largest aircraft fleet in the world had begun to mobilize within hours: Card-carrying members of CAP left families and work responsibilities behind, canceled personal plans, and reported for duty.

Organized with the military, today's 61,000 CAP members are located in 1,650 units throughout America. While many of its operations are flown using 530 CAP-owned aircraft most involved the more than 4,000 aircraft privatel owned by CAP members.

Mission of Radio Communications at the State/Wing Level:

Provide a reliable state wide point-to-point, air-to-ground, and ground mobile system for use in search and rescue, civil defense, and disaster relief missions. Train and provide radio operators who can work within capabilities of it's infrastructure. Maintain radio, teletype and wireless

Continued on page 26

Scanning the Civil Air Patrol continued

photo downlink operating positions at key positions. Ensure that systems and operating methods will interface with neighboring wings and the national tier. Participate with the federal government's Shared Resources emergency radio network (SHARES).

Overall Purpose of the Network- Provide the Commander with the means with which to manage units in the field and to provide each unit commander at each echelon the ability to work with superior and subordinate command.

Plans vary slightly at each command, however there are standardized frequencies which CAP operates on. Changes are in the works as the planning continues on the APCO-25 project but for now we can only relay to you what information is available.

For example, the Delaware Wing maintains three fixed-site VHF voice repeaters which provide border to border.... vehicle to mission base... voice capability. Corporate vehicles are equipped with VHF assets for mission and safety use. Routine non-emergency administrative communications statewide and between other CAP entities will be conducted via PSTN, E-mail and other landline based technologies, when available. RF Communications between DEWG, Region, and the National tier will primarily be conducted using High Frequency Radio (HF). The Delaware Wing maintains compatibility with the Region slow scan picture system and other systems available to CAP. The Wing maintains 4 corporate aircraft (C-182 and C-172) equipped with CAP VHF equipment and separate, spare VHF antennae for slow scan or aerial repeater use.

Summary of Delaware Wing Communications:

Administrative communications are conducted using PSTN, E-mail and other landline based technologies during non-emergency status. Primary RF communications within the state and between Regions and the National tier will be conducted using VHF and HF radio. Wing internal "customers" are the state and county agencies it serves and the member squadrons which make up the work force to serve those agencies. External "customers" are the National network tier, adjacent regions and federal agency participants via HF radio. The Delaware Wing operates scheduled VHF nets and participates with Region command, traffic, and weather preparedness nets. Three VHF voice repeaters provide statewide ES communications capability with provisions for battery and generator backup. Three VHF packet nodes provide means for hard text traffic between key points of interest while individual member use of this network is encouraged.

While it would be impossible to list all frequency and repeater locations nationwide, here's a listing of a couple of the more active Wings that will be a good primer for you.

Special thanks to C/MSgt Joshua Boyce for his valuable assistance with this project.

Civil Air Patrol Frequencies

143.900 (FM) - F-1 (Repeater Input)
148.150 (FM) - F-1 (Repeater Output)
143.750 (FM) - F-2 (Repeater Input)
148.125 (FM) - F-2 (Repeater Output)
148.1375 (FM) - F-3 (SAR)
142.2625 (FM) - F-8 (Base to Base Tactical)
143.7625 (FM) - F-5 (Mobile to Mobile)
143.7750 (FM) - F-6 (Operations)
122.900 (AM) - Training
123.100 (AM) - Search & Rescue
149.5375 (FM) -Operations
149.8950 (FM) -Packet
161.5875 (FM) -APRS (Automatic Position Reporting System)
161.9875 (FM) -APRS
163.1250 (FM) -Flight Line Operations
163.1500 (FM) -Flight Line Operations
165.1250 (FM) -Crash Scene Operations
165.1500 (FM) -Crash Scene Operations
121.600 (AM) - Training Beacon
148.150 (FM) - National Simplex

US Defense Department Intra-Squad Radio (ISR) Frequencies- All in the FM mode:

396.8750 ISR Channel 01
397.1250 ISR Channel 02
397.1750 ISR Channel 03
397.3750 ISR Channel 04
397.4250 ISR Channel 05
397.4750 ISR Channel 06
397.5500 ISR Channel 07
397.9500 ISR Channel 08
398.0500 ISR Channel 09
399.4250 ISR Channel 10
399.4750 ISR Channel 11
399.7250 ISR Channel 12
399.9250 ISR Channel 13
399.9750 ISR Channel 14

Ohio Wing Frequencies-

Cambridge 148.125
Lafayette 148.150
Carey 148.150
Lancaster 148.150
Cincinnati 148.150
Lima 148.150
Columbus 148.150
New Philadelphia 148.150
Dayton 148.150
Thompson 148.150
Jackson 148.150
Wauseon 148.150

Scanner Features, Which Ones Do You Really Need? PART 1

By: Jon Van Allen, KF7YN

The scanning hobby, like everything else is in a constant state of change as technology evolves with ever more complexity. No sooner do you get the latest and greatest scanner only to discover it has been replaced with one with even more bells and whistles and features you may or may not ever need or use. In Part 1 we will discuss basic features and how to decide which ones you would likely need and use. Part 2 in the next issue will cover the more advanced features, what they mean and how to use them in a practical application.

It is true many features and functions sound like technical buzzwords, and they can be confusing, but soon you will know what these terms mean and how to use them! Your current scanner may have all the features you will likely ever use, but if you are thinking about buying a new scanner or upgrading or replacing an older model, take a few minutes here to consider which features you are likely to use, even if only occasionally. We will help you make an informed decision before plunking down your hard earned cash.

It has been my experience the vast majority of the time I don't use all the features my scanners have. One good example of this is the weather alert function many scanners have these days. I think I've used this feature a grand total of once or twice before I realized I was wasting a $200 scanner on something a $39 dedicated weather receiver could do. I acknowledge the great convenience and safety implications of having a weather alert in my scanner, but I use another piece of equipment for that task so that I can use my scanners for what I got them for to begin with - scanning!

If you only use your scanner at home to listen to the local police, fire and medical dispatches, you may do fine with a basic scanner that has fewer features. Almost every scanner comes with a basic search feature that will search between two pre-determined frequencies. Some scanners have pre-programmed search ranges for police, fire, marine, aircraft, ham, CB and other bands of interest. Pre-programmed search is most useful for road trips and travel to a new area. When I travel out of my local area, my scanner is almost always in the pre-programmed search mode.

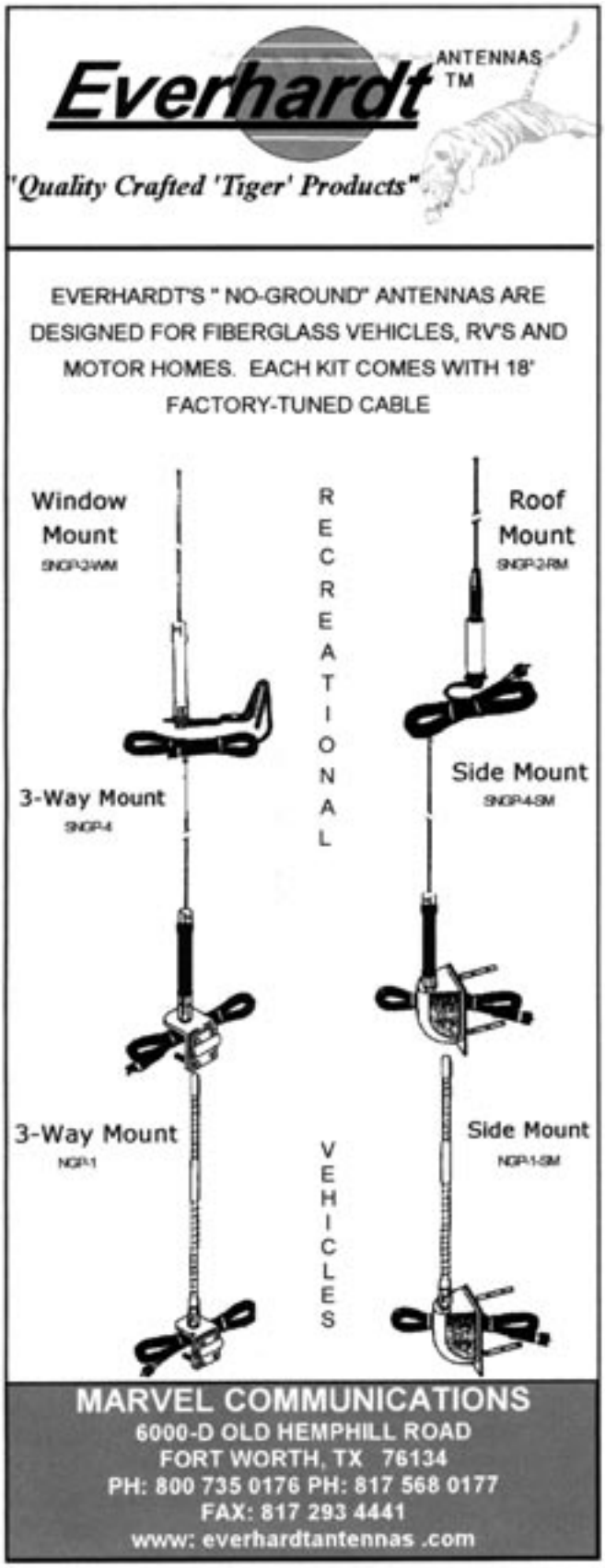
Uniden makes a series of "Beartracker" scanners that are pre-programmed by state. You simply scroll through the list until you find the state you are in. These scanners are very useful but as more State Police/Highway Patrol move to trunking and/or APCO 25 digital; you may need to do a little research before you travel to another state. The latest Beartracker is the BCT-8 which trunk tracks as well conventional scanning. The BCT-8 is high on my priority list for this year's list of new toys for the upcoming summer travel season.

Depending on where you live or if you travel often, you may need more features such as trunking, APCO P25 digital, etc. If you like to spend time in the great outdoors camping, hiking, fishing, boating or skiing, think about setting up a search range for the area you will be visiting. Decide before hand who you would listen to; State or National Park Rangers, Fish & Game, Marina, Search & Rescue, Ski Patrol, Resort Security, etc.

I like to use the spectrum scope and auto-store features in my AOR AR8200 when I'm camping to find and store any new frequencies I may discover. I also use the auto-store feature in my Radio Shack Pro-2042 at home to find new federal and military air frequencies. (We will discuss spectrum scope in Part 2 as this is a more advanced feature). Auto-store will write into memory any frequency the scanner stops on. I find new frequencies for Forest Service, State and National Parks, police, search & rescue, etc. by using auto-store while I'm busy doing other things at home or while I'm camping. Call it unattended memory management! The bottom line here is that you don't need fancy digital and trunk tracking scanners when you are camping and fishing, conventional scanning still rules in state and national forests and parks. A conventional scanner and a shortwave receiver are "must have" items for camping or boating.

You may be debating whether you should buy a trunk tracker even if your area is not yet trunked. Unless you live in a remote rural area, the chances are good some agency you scan will move to trunking sooner or

Continued on page 28



Scanner Features, PART 1 continued

later. One advantage to having a trunk tracking scanner such as the popular Radio Shack Pro-95/96 or Bearcat BC-250/296D is that you can program them with conventional frequencies and put a text tag on each memory position. They can also be programmed with a computer so that makes them even more appealing. If at some point some agency in your area moves to trunking, you don't need to buy a new scanner!

The most common basic features found in most modern scanners are: trunk-tracking, programmable search, pre-programmed search, alpha tags, attenuation, step size, mode, priority, delay and lockout.

Let's start with trunk-tracking features. Within trunking, there are two ways to monitor talk groups (just as with conventional frequencies) "search" and "scan" which is also known as "open" and "closed" mode in most Radio Shack scanners. Search (open) means you are monitoring all talk groups, scan (closed) means you are scanning only talk groups you have programmed into your scan list. You can see this is much like searching between two conventional frequencies or scanning only those frequencies you have programmed into your memory banks. These are search and scan features you will definitely need.

The single most important feature to me is text tags (TEXT) also called alpha-numeric display (or alpha tags). The trunked system in my area has over 1,000 talk groups! There are just too many frequencies and talk groups to remember so having a text name makes it easy to see who is talking at any given moment. The second most important feature to me is programmable search. I am constantly searching between two frequencies for new activity.

We already talked about pre-programmed search ranges and I would say those are also a "must have" for all but the most basic scanning hobbyist. Alpha tags are nice and definitely required for those of us in urban areas. If you are in a rural area or monitor less than about 50 frequencies, you may not consider alpha tags necessary.

Attenuation: (ATT) this is simply a method to reduce signal strength entering your scanner. This is most often used in urban areas when scanning close to strong TV and radio stations, powerful paging transmitters, close proximity to cell phone towers, etc. By reducing the level of an incoming signal, receiver overload and intermod are greatly reduced and help reduce image reception. You have undoubtedly heard paging signals interfere with your favorite police, fire or medical frequencies. If you are having these interference problems and have an attenuator feature (usually abbreviated ATT) try enabling it and compare. Don't be fooled by signal overload, sometimes it breaks up and sounds just like a

Scanner Features, Which Ones Do You Really Need? PART 1 continued

weak signal. I found this out with our local trunked system, there are certain points in my town where the signal is very static prone so one day I tried pressing the ATT button and the signals came in loud and clear! I then discovered that area is in the signal path of a microwave point to point link which was swamping out my scanner. By attenuating the signal, the receiver recovers from the overload and hears the signals I want it to. Very nice feature to have and most people don't realize how well it works!

Selectable step size: (STEP) This is not a major problem now, but with the current FCC "refarming" of VHF and UHF frequencies, being able to select the correct step size will be very helpful. Most scanners have a default step size for programming frequencies into memory channels. For example, Yellowstone Park south repeater is 165.5875 but in some of my scanners the step size is not selectable so that frequency defaults to 165.5850 instead. While this is close enough to hear the conversation and is not a real problem, it could be a problem later when all VHF frequencies are on the new 7.5 kHz (UHF 6.25 kHz) band plans the FCC is adopting. The FCC also wants to mandate 8.33 kHz for the civilian air band, but that won't happen until they go to digital or some other form of narrowband modulation. 8.33 kHz is too dang narrow for existing AM signals! Just look at the huge "bleed over" problem on CB channels which are spaced at 10 kHz! You can imagine what going from 25 kHz to 8.33 kHz (only 1/3 of the current spacing!) would do to cause tons of interference in a busy area. At any rate, some scanners are capable of 6.25, 7.5 and 8.33 kHz spacing such as my AOR AR8200. I encourage you to try programming and searching with different step sizes until you become familiar and comfortable with step sizes for each band. Some examples are: civilian air band (118-137 MHz) step size is 25 kHz. Military air band (225-400 MHz) is moving from 50 to 25 kHz. UHF band from 406-420 and 450 to 470 MHz is 12.5 kHz, soon to be 6.25 kHz which is half the current bandwidth.

Mode: How do you know when to select AM/FM/WFM/USB/LSB? Usually the scanner will pick the correct mode for the band you choose. Some scanners allow you to over-ride mode but you may be asking why would a person want to change modes? The military aircraft band is a good example. Nearly all communications from military aircraft between 225-400 MHz are in the AM narrow mode. The very popular Radio Shack Pro-2004/2005/2006/2035 and 2042 scanners default to FM narrow on this band rather than AM narrow. A small amount of military satellite voice can be heard on FM but the vast majority of activity on this band is AM so one must manually change from the default setting with these scanners.

Another example is the military/government band right above the civilian aircraft band from 137 to 144 MHz. A lot of military aircraft use this band as well, which is easily heard during military airshows such as the Blue Angels, Thunderbirds and Snowbirds. Some scanners automatically pick FM narrow for this band but a lot of the communications are AM, as if this band were a continuation of the civilian air band above 137 MHz. While FM is used by everyone else, military aircraft often use AM and some scanners will not let the user chose AM. Other scanner brands and models that will let you chose are popular with military airshow enthusiasts.

Of course if you have a wide frequency scanner that includes shortwave, you need to pick between the modes there as well such as LSB (lower sideband) USB (upper sideband), RTTY (radio teletype) AM, FM, etc. While you wouldn't normally associate sideband being used on VHF and UHF, or FM being used on shortwave, there are some who do use these modes, mostly by ham radio operators. FM is a very popular ham radio mode between 29.5 and 29.7 MHz and hams do use sideband on 50, 144 and 430 MHz. Being able to hear these lesser used modes can be very interesting and you would be surprised how far hams can communicate on these bands which are not normally considered long distance bands! Would you believe hams bounce signals off the moon on 144 and 430 MHz? That's wild and crazy but you won't hear it on FM! Anyway, on to other features...

Priority: (PRI) pretty much says it all, if you want a particular frequency to be heard above all others; you need a way to sample that frequency every couple of seconds and switch to it if it becomes active. That's simply what priority is. Most scanners allow you to put priority on the first frequency in each bank, or to select any channel for priority. I don't generally use priority because it "chops" the audio of the frequency in use as it samples the priority frequency. Some scanners chop worse than others, but I have yet to hear a priority that isn't irritating to me. I'm sure someone makes a scanner with a decent priority, I just haven't fount it yet!

Continued on page 30

Scanner Features, Which Ones Do You Really Need? PART 1 continued

Delay: (DLY) holds the frequency or talk group for a second or two so that a reply can be heard before resuming scanning or searching. I prefer about 2 seconds of delay. Some scanners default a delay of 2 seconds, some offer the ability to choose between about 1/2 second up to 4 or more seconds of delay.

Lockout: (L/O) this one is fairly straightforward. If you don't want to monitor a certain frequency or talk group all time but want to keep it available, lock it out! You can always unlock it later! I use the lockout feature for the "service" channel of our local police, for example. Listening to them run a plate or drivers license for warrants is generally boring but now and then when I see someone pulled over, I'll unlock it to hear what's going on.

Lockout review: (L/O Review) let's say you have locked out quite a few channels but can't remember which ones. Without going through every memory position you can see which channels are locked out by using the lockout review feature. My Pro-2042 has this feature and it is very handy since I use the auto-store feature so much and find myself constantly locking out frequencies it found that I already know. Those not on the lockout review list are probably new ones I didn't have before!

Auto store: (AUTO) This feature allows your scanner to store frequencies it finds after running all day or night. If I am traveling to a new area, I scan the new auto-store bank of frequencies my scanner found for me! If I'm at home, I compare frequencies in the auto-store bank against a list of known frequencies (including those in the lockout review list described above). Those not on either list are probably new discoveries! How cool is that?

Other useful basic features you will eventually use are: CTCSS decode, Battery saver, sleep and on/off timers. In my previous "How to become a scanning expert" articles, we discussed in detail how to use the CTCSS (PL Tone) decoding feature so I won't rehash that here. Suffice it to say it is a very helpful feature in identifying who is using a particular frequency.

Beware of modifications (mods). Unless you know exactly what the modification does and know for sure the mods didn't affect the scanner in some negative way, I recommend staying away from modded scanner. I bought a Radio Shack Pro-46 which had been modified with a discriminator tap (baseband audio tap for the popular "Trunker" program). It worked fine until I hooked up an external antenna then it quit receiving. Turns out the person who modified the scanner grounded the tap at the wrong point. It is not uncommon for modifications to affect performance so be very careful.

Next time we will continue this article with more advanced features such as spectrum scope, APCO 25 digital, VFO's, Automatic Gain Control (AGC), Automatic Frequency Control (AFC) Noise Limiters, frequency offsets, copy and paste, bank resizing, cloning editing, deleting memories, etc. You have two full months to become familiar and comfortable with the basic features of your scanner before moving on to the advanced features!

As always, we welcome your email, what you are hearing and what topics you would like to see covered in these pages. I can be reached via email: jonvanallen@msn.com

Until next time, happy scanning!

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Please Tell Us You Saw It In National Communications!

Ham License Restructuring Soon

By: Gordon West, WB6 NOA

By next year the Federal Communications Commission should announce the second phase of the amateur radio license restructuring opening up the worldwide bands for a brand new operator who does not need to take a Morse Code examination. Action by the World Administrative Conference 2003, Agenda Item 1.7.1, Article 25, removed the international requirement for the demonstration of Morse Code proficiency on medium- frequency and high-frequency bands, 1.8 MHz-30 MHz.

But more important than the elimination of an entry-level code test for worldwide high-frequency privileges is the proposed restructuring of the written examination that a new applicant must pass to get his or her first license.

Phase 1 of the restructuring process occurred on April 15, 2000, taking the previous 6-level system down to 3 levels-- Extra at the top, General class in the middle, and no-code Technician class as entry level.

The code test for General and Extra class was lowered to 5 words per minute. Technician class, for VHF and UHF privileges only, required no code test--which was part of a 1991 rulemaking.

The Advanced class examination material was rolled into Extra class, causing the current Extra class test question pool to balloon up to a total of 801 questions to study for the 50-question Extra class exam.

General class written exams hardly changed at all, so the General class written exam remained virtually unchanged but the code test dropped from 13 wpm down to 5 wpm. You would have thought this would have attracted thousands of upgrades, but there were still many Technician no-code operators who just couldn't, or wouldn't, knuckle down and learn the dots and dashes at 5 wpm.

Three classes of Ham Radio licensing proposed. Entry level has HF privileges without any Morse Code test.

Kids would benefit with a more realistic entry-level Ham question pool.

But it was the Technician class question pool for the entry-level examinee that went totally out of proportion for VHF/UHF privileges. The Novice written examination was folded into the Technician exam, and the total question pool swelled to 511 Q & A's to memorize for the Technician test with 35 on the actual exam. No code test. But no worldwide privileges, either, without a code test.

The huge Technician class question pool fostered rote memorization of the entry-level instruction manual. Some of the 511 questions were so overly technical that even some engineers were simply memorizing the correct answer without delving into the formulas behind the correct answer. And many entry-level questions had answers intended to trip-up the speed reader. You know, answers that start out correct, but the final word is incorrect.

"The current entry-level exam is overly complex," comments Thomas Fuszard, KF9PU, Chairman of the National Conference of Volunteer Exam Coordinators. "It's no wonder that potential applicants become

Continued on page 32

Ham License Restructuring Soon cont.

discouraged. They are presented with study materials that are on the surface more than 60 times the complexity of the original Novice license, and a much larger exam," adds the NCVEC Chairman, yet whose own NCVEC Question Pool Committee (QPC) were the ones who regularly caused the entry-level question pool to swell totally out of proportion.

Action planned by the Federal Communications Commission, based on numerous petitions for rule consideration, will likely restructure the entry-level ham exam, dramatically reducing the current 511 over-technical question pool down to maybe 200 RELEVANT questions, 20 or so on the actual test. Instead of studying the reactance of a coil, brand new operators will answer questions about frequencies they are gaining on high frequency with the new restructured entry-level license class.

The entry-level exam might be renamed NOVICE, or possibly COMMUNICATOR. Twenty or so questions on the exam, 74 percent passing rate, multiple-choice answers. No code test. PRIVILEGES ON HIGH FREQUENCY!

That's right, straight out of the chute with 4 juicy worldwide ham radio bands for both digital and single-sideband communications. Eighty meters would be a great nighttime band to work coast to coast, and 40 meters a great nighttime band to work the world. Forty meters during the day would reach out 500 miles easily for daytime skywave contacts.

Fifteen meters is a daylight band with worldwide contacts almost noise-free. Ten meters will offer

Red Cross teams throughout the country could use more Hams to run their high frequency mobile stations.

Ham classes for beginners will no longer take 10 weeks to teach if proposals go through next year.

summertime single-hop and double-hop sporadic-E skywave contacts, and occasionally some worldwide daylight excitement, too.

The new operator might gain 50 kHz or 100 kHz--which is plenty--on each of the bands, with 10 meters possibly open to additional band privileges. The new operator likely wouldn't get the 20-meter band which is relatively full now.

As proposed by several amateur radio groups, current no-code Technician class operators may end up with General class privileges because, as proposed, the General class license may also not require any CW (Morse Code) testing. Some proposals may allow existing Technician class operators to upgrade to General without ANY further written exam, but this is risky. Unless the Technician class operator studies radio frequency safety questions, band plan questions, and questions about good operating techniques, their entrance to all of the worldwide ham bands might be less than smooth. I would suggest that all current Technician class operators take the General class written examination for the new restructured General class license. Almost the same privileges as the General class has now, including power output to 1,500 watts. But the written exam is strongly recommended.

For Extra class, the question pool will probably remain as large as it is, and some petitioners are asking the FCC to indeed impose a code test, and maybe take the code test from 5 wpm back to 13 wpm, or maybe 20 wpm!

But our focus for Phase 2 of the restructuring must be intense at the entry-level exam. We must not let the

Ham License Restructuring Soon cont.

Question Pool Committee solely dream up their own questions that would be used on the test. We should see the Question Pool Committee assign individuals or groups specific question areas, and let that group submit relevant questions and answers to be considered for the test. I could see a DX club doing operating and procedure questions. I could see a technical group developing questions on the simple mobile set-up in a vehicle. Maybe YOUR particular club is big on dipole antennas, and you would submit to the question pool 50 or so questions that a good beginner operator should know about building and stringing-up the dipole.

The new entry-level test questions should come from real live radio operators--hams who are on the air nearly every day. We need to get the new entry-level ham radio questions written by active hams, as opposed to questions coming from radio operators dredging them up out of engineering books.

The comment period on the proposed rulemaking is long closed. Even reply comments are already in, so there's nothing you can do to influence the FCC decision at this time.

If you are not a ham, you may want to invest in some ham radio gear so you can begin monitoring. It's a good bet that the worldwide bands plus VHF/UHF will be awarded to an entry-level licensee, so maybe get one of those new HF/VHF/UHF DC to daylight ham radios and have the best of all worlds in one neat radio set. I wouldn't buy just a shortwave receiver to sample high frequency--get a unit that would be capable of transmitting as soon as you earn your new entry-level privileges. Both Yaesu and ICOM offer a 100-watt, high-frequency set for around $550. Both Yaesu and ICOM offer a single unit for HF/VHF/UHF at 100 watts for around $800. And if you are interested just in a 2-meter handheld, under $100, brand new. Dual-banders for 2-meter and 440 MHz, under $225.

So if you've been thinking about ham radio but didn't want to bust a brain cell on the 511 entry-level question pool, stand by for new rulemaking by the end of this year. At least we all hope so--until we get the current entry-level Tech examination cut down to size, we continue to lose thousands of prospective ham radio operators joining the hobby who can indeed bring tremendous shortwave and VHF/UHF experience to the airwaves.

If you're not a ham, hopefully the new restructured service will have you JOIN UP.

New Hams gaining worldwide HF privileges will get some "Hands On" antenna building experience.

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Product Announcements

Uniden America Corporation Has Been Working On Its Next Generation Of Handheld Scanners.

BC246T

BC898T

Some word has already hit the streets about a few of these new models. Please note that, since all of these models are still in development, the feature set and appearance could change somewhat by actual release date. Generally, the closer we are to release, the firmer the features.

The BC898T (July availability). This is a replacement for the Uniden BC895XLT base/mobile scanner. Features will include TrunkTracker III: Motorola, EDACS and LTR analog trunking, Increase from 300 to 500 memory channels (and 1000 talk group channels), Instant CTCSS DCS decoding and a RS232 DB9 connector for PC interface. The case style and basic operation remain unchanged from the previous model.

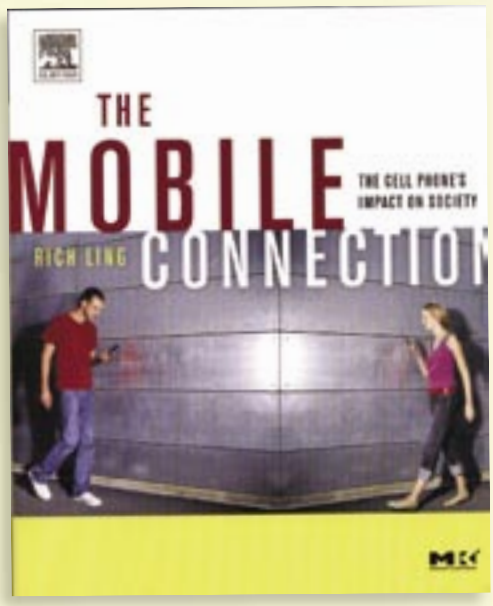
The BC246T (November availability). Slated as a replacement for the BC245XLT, the BC246T actually packs in more features than the BC250D (but no ability to upgrade to digital). Here's a taste of the features you'll find in this model: Trunk Tracker III -- Motorola, EDACS and LTR analog trunking, alpha tagging, 2 line alpha display, up to 3300 memory channels (1600 typical if alpha is used on all channels), dynamic memory management, AA battery operation, preprogrammed with emergency dispatch channels for over 400 towns, cities and counties, instant CTCSS/DCS decoding, S.A.M.E. weather alert, custom preprogrammed search ranges, frequency coverage from 25 - 54 MHz, 108 - 174 MHz, 216 - 225 MHz, 400 - 512 MHz and 806 - 956 MHz (less cellular), Close Call RF capture technology and PC programming and control (software extra) and 1240 - 1300 MHz. Size of the unit is 4 1/2 X 3 1/4 inches not counting knobs, antennas, etc.

The BC92XLT (Late November availability). This is a major update of the BC80 XLT, including the adding of memory, features and reducing the size. Features will include: 200 channels in 10 banks. compact design, frequency coverage from 25 - 54 MHz, 108 - 174 MHz, 406 - 512 MHz and 806 - 956 MHz (less cellular). Other features include service search including weather, police, fire, aircraft, marine and ham radio, 10 user selectable search ranges, a scan speed of 100 channels per second as well as a search speed of 100 steps per second and a hyper search of 300 steps per second. There will be a display backlight, close call RF capture technology, priority scan, one touch weather delay and AA battery operation. The radio's size will be 4 1/2 X 3 1/4 inches not counting knobs, antennas, etc.

The BC72XLT (Early 2005 availability). This is a major update of the BC60XLT. there will be added memory as well as a reduced size of the scanner. Features include: 100 channels in 10 banks, compact design, close call RF capture technology, 25 - 54 MHz, 108 - 174 MHz and 406 - 512 MHz coverage, service search including weather, police, fire, aircraft, marine and ham radio, 10 user selectable search ranges, a scan speed of 100 channels per second and search speeds of 100 and 300 steps per second, a backlit display, priority scan, one touch weather, delay and AA battery operation. The scanner will be 4 1/2 X 3 1/3 inches in size, once again not counting knobs, antennas, etc.

Finally from Uniden will be the **SC230** with availability early in 2005. This unit will be replacing both the SC180 and SC200 and will incorporate many of the same innovations of the BC246T, but is targeted for use at and around the track. Its many features include: over 1000 channels, dynamically allocated channels, preprogrammed with NASCAR and BUSCH series frequencies, close call RF capture technology, race track operating systems, which will make it easy to quickly listen to your favorite driver, on-air cloning, study duck antenna included, PC programming and control, but the software will be extra. This unit measures the same size as the BC246T.

Product Announcements

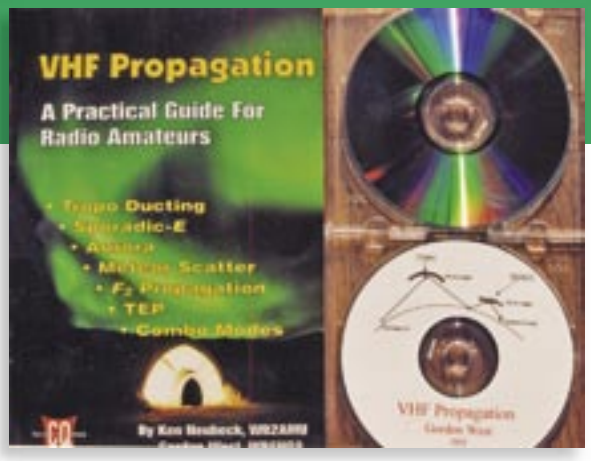


The Mobile Connection

Another new piece of information for this issue comes in the form of a new book by Rich Long. He asks the question, "Has the cell phone forever changed the way people communicate?" The mobile phone is used for "real time" co-ordination while on the run, adolescents use it to manage their freedom, and teens "text" to each other day and night. The mobile phone is more than a simple technical innovation or social fad, more than just an intrusion on polite society. This book, based on worldwide research involving tens of thousands of interviews and contextual observations, looks into the impact of the phone on our daily lives. The mobile phone has fundamentally affected our accessibility, safety and security, co-ordination of social and business activities, and use of public places.

Based on research conducted in dozens of countries, this insightful and entertaining book examines the once unexpected interaction between humans and cell phones, and between humans, period. The compelling discussion and projections about the future of the telephone should give designers everywhere a more informed practice and process and provide researchers with new ideas to last years.

VHF/UHF Propagation Book and Audio CD



Well known VHFers Gordon West and Ken Neubeck announce the publication of their new book VHF Propagation, A Practical Guide for Radio Amateurs, with over 125 pages of radio excitement on the VHF and UHF bands.

Topics covered include: Atmospheric anomalies, tropospheric ducting, Sporadic E, aurora, meteor scatter, moon bounce, satellites, F-layer and double hops, sounds of the ionosphere, 6-meter FM skywaves and transequatorial propagation.

Both authors realize the need for a VHF/UHF propagation book without the endless pages of ultra-technical refractive index formulas and meaningless charts with nothing but numbers. This book is still plenty technical, but written in the terms of logical amateur radio (as well as scanning) operation.

The book is published by CQ Communications, Inc., and may be ordered by calling 800-853-9797 with your credit card for $15.95.

Gordon west has also recorded a companion audio CD (or audio cassette) bringing each of these propagation sounds to your stereo player with West narration. Listen to spherics at 30 Hz, and pick out the sounds of CW coming in on 432 MHz from 2,500 miles away via tropospheric ducting. Hear what moon bounce sounds like and listen to the fascinating sounds of the VHF/UHF auroral propagation.

The disk (or cassette) is available from Gordon West Radio School, 2414 College Drive, Costa Mesa, CA 92626 for $9.95 plus $3.00 shipping and handling.

Someone Has to Go First

By: Alison Bour

Someone always has to go first. In the state of Connecticut, it was Walter Tyz of Voluntown. With the call letters, 1A1191, he obtained the state's first CB license.

He says it all began in the late 1950's. Now 84, Tyz was then a private investigator and had a few friends who were hams. The FCC offered a band for general use and Tyz jumped at the chance.

"On June 6th, 1957, I put an application in," said Tyz.

He admits he wanted to be a professional ham operator but, in those days, one had to know Morse code. The test was very difficult and Tyz did not pass it.

The first frequency offered to CBer's was 450 megahertz. In those days, it was called mega-cycle, says Tyz. Radios weren't easy to come by either.

Yet, he was able to find a marine radio -- used on boats and ships -- and have it converted. Fixing up a radio this way was called "Mickey Mousing."

"There was no such thing as a CB in those days," explained Tyz. So he and his friends took the antenna off the marine radio and used a four-foot hollow pipe instead. Then they attached a cable to the pipe. "It looked like a teepee," laughs Tyz.

But it worked albeit, at that time, there was much static and noise to deal with. By 1959 the FCC was offering more room to CB enthusiasts. Tyz then went to Radio Row, near the old World Trade Center towers where there were an abundance of electronics stores. He bought some new equipment with a 96-inch fold-down antenna. He also obtained a new license, IW0930.

A lot had been done to eliminate static by this time except automobile noise. Radios were called super hetroydine, and one needed a suppresser in the car to cover the noise caused by generators and spark plugs. "All radios had tubes and were operated by crystals. Soon the FCC was overwhelmed and added 12 more frequencies. The equipment got better and better."

Tyz said CBer's began to be able to talk across state lines more easily but, ironically, they still had trouble talking to their next door neighbors. Tyz remembers a funny incident when he was at a Louisiana drive-in on vacation. He used his CB to contact his good friend in Connecticut and the message came across completely clear. "Harry didn't believe it was me in Louisiana. I had to send him a postcard as proof."

This was about the time that the FCC began adding a fee for license holders. Up until then, it was free but some people began using such large antennas that they would drown everyone else out, and the FCC wanted to crack down on these more shady characters, Tyz said.

In terms of his career, Tyz did not continue being a private investigator. For most of his adult life, he worked as both a state prison officer and a photographer for the Hartford, Connecticut Times.

His photos became well known, too. A prize picture of his daughter, Antonio at age 5 was placed in the Kodak Hall of Fame in New York. He also won a K-mart sponsored contest. Out of 200,000 people, Tyz placed first. He was also recognized for his photos of the 1944 circus fire in Hartford.

Unfortunately, his photos were ruined in a basement flood. But, according to his wife, Peg, Walter still has the same camera he won as a prize in the K-mart contest in 1962.

"It's a K-1,000 Pentax. It's all manual and has no flash. He buys outdated film from the dollar store," Peg said.

Walter admits he eventually got tired of the CB life. He said the frequencies got too congested and he didn't want to deal with it anymore. But, during a recent nursing home stay, Tyz decided to get back into his hobby. He bought equipment and, after meeting Jay Townley at a truck stop in Rhode Island, had the trucker convert the CB for him.

Peg said it's been a funny twist of events. Tyz once decided to leave his CB behind, in part, because truckers were causing so much congestion. "And, now he's back at it!"

Closing Comments

By: Norm Schrein, KA8 PGJ

Electronics retailers notice a slump in scanner radio sales during the summer months and an increase in CB radio sales during the same time period. This is a good indication that most people get out of the house and on the road. In the process they leave the home scanners and CBs behind and hit the road.

Many people get a CB so they can listen in on channel 19, or call for help if needed. However, many forget the on-the-road usefulness of a good scanner.

One interesting thing has happened to scanners. They have gotten harder to program by hand, but much easier to program with a computer. Some scanners even have customized frequency lists for certain parts of the country. So, with a computer and inexpensive software you can pre-program your scanner for many areas of the country and program it within minutes.

For example, I can take a PRO 95 and although I live in Dayton, Ohio, I can set it up to receive all the major frequencies in the Dallas/Fort Worth, Texas area in just a matter of minutes -- and this includes setting up all the trunking systems and the Alpha displays.

So, where before I might have just left the scanner at home, because I would not have the time to program it for the area where I was going, I can now just take a few minutes and set it up, throw it in my carry on and travel to my new location. When I get there I can turn the radio on and start hearing activity right away.

I found it hard to understand why people who live in Chicago would listen to the Los Angeles police on the internet -- but there is always that interest in the cops and fire fighters, no matter where they are. So, why leave an important tool at home when you are on the road? Listening to the local activity has one hard and fast fact that listening to public safety comms on a computer does not. You are in the area.

True, it may take a while to get accustomed to street and place names and if you are only in an area for a short period of time; you will not know most of them, but there are times when you will find activity right in your neighborhood and with the flip of a switch or the pressing of a button; you are right in the middle of that action. Ever go by an auto accident and wonder what is going on? Have you ever been in a long backup on the highway and wonder about the details of the holdup? The official details that is, and not what you hear on Channel 19. Well, with a scanner, you can do just that.

There are some places that do not allow scanners in vehicles, so you may want to check up on local regulations before you drive through a "no mobile scanner" state, but no one has rules against having a scanner in your motel room.

I have traveled outside the US many times and have always taken my scanner with me. Even in places where I do not know the language, it is interesting to listen in. For example all aeronautical communications are in English, so while broken, you will be able to understand the air controllers. Other times it is just the cadence of the communications where you can determine if the person on the mic is a police officer, fireman or someone just conducting business. This happened to me in Prague some years ago. I new that what I was hearing in the 151 MHz range was police communications, even though I did not know what they were saying.

If you can find a local that understands the language have them listen to the communications and give them your suspicions on what is going on and who it might be that is transmitting. One time I did this in Austria and found the National Highway Police (I suspected police activity). Apparently some unfortunate driver was receiving a speeding ticket. Another time off the coast of Cuba (on a cruise ship) I tuned into some traffic that sounded like either military or police comms. I asked one of the ship hands who understood Spanish to have a listen, well it was the harbor police.

So, as you can see, listening to a scanner in a place other than your home port can still prove interesting. You just need to know what to listen for and have your scanner programmed for the correct frequencies.

So, when you head out the next time take a scanner with you and listen into the excitement -- just like you do at home. The names and places are different, but the interest can remain the same.

LAST PAGE OUT

Present Day Iraq, *above photo by Tami Silicio*

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